

FREIGHT TRANSPORTATION PLANNING 101

TRANSPORTATION PLANNING ACADEMY 2017

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Division of Transportation Planning





Stuff We Use Everyday

Journey



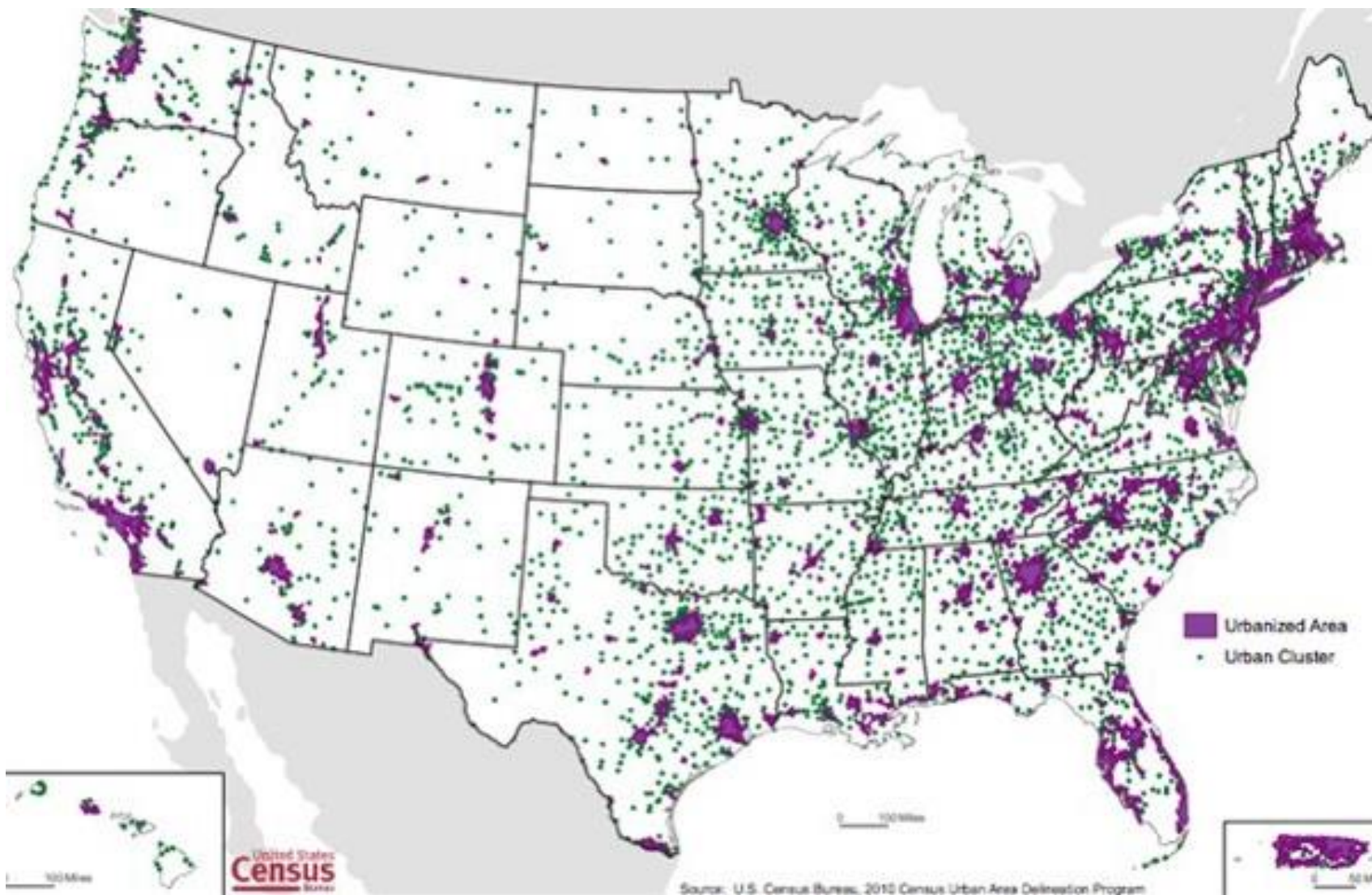
What is Freight Planning?

The Importance of Freight

Modes of Freight Transportation

Freight Challenges

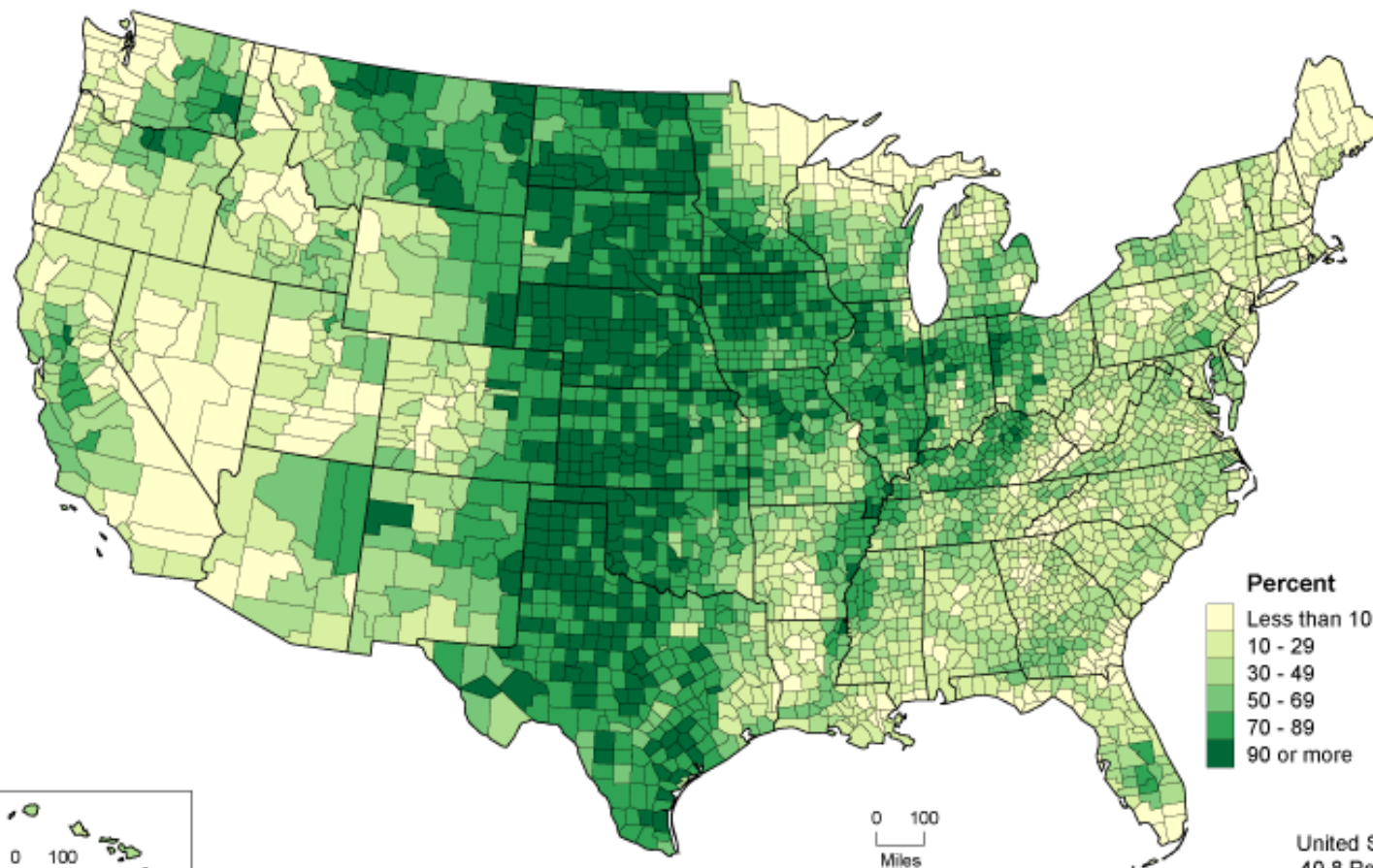
The Future of Freight



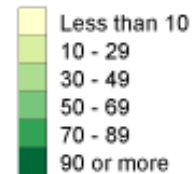
0 200
Miles



Acres of Land in Farms as Percent of Land Area in Acres: 2007

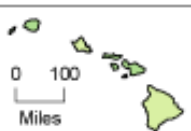


Percent



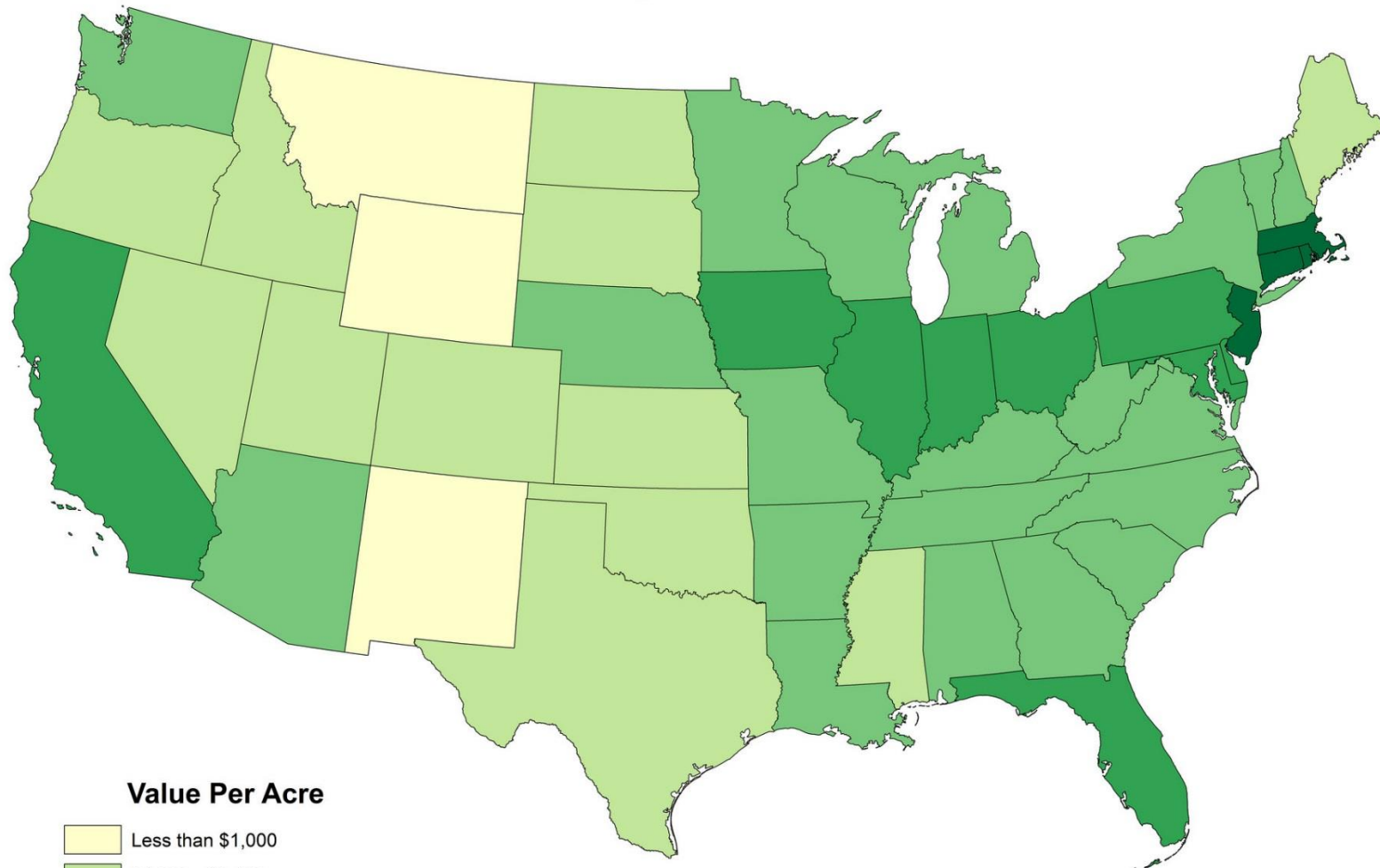
United States
40.8 Percent

0 100
Miles



07-M079
U.S. Department of Agriculture, National Agricultural Statistics Service

2015 Value of Agricultural Land Per Acre



Value Per Acre

- | | |
|---|-------------------|
|  | Less than \$1,000 |
|  | \$1,000 - \$2,499 |
|  | \$2,500 - \$4,999 |
|  | \$5,000 - \$9,999 |
|  | \$10,000 or More |



Source: USDA National Agricultural Statistics Service

Importance of California



One of the world's largest economies



Nation's largest gateway



One-third of economic product and jobs



Over \$740 billion in gross domestic product



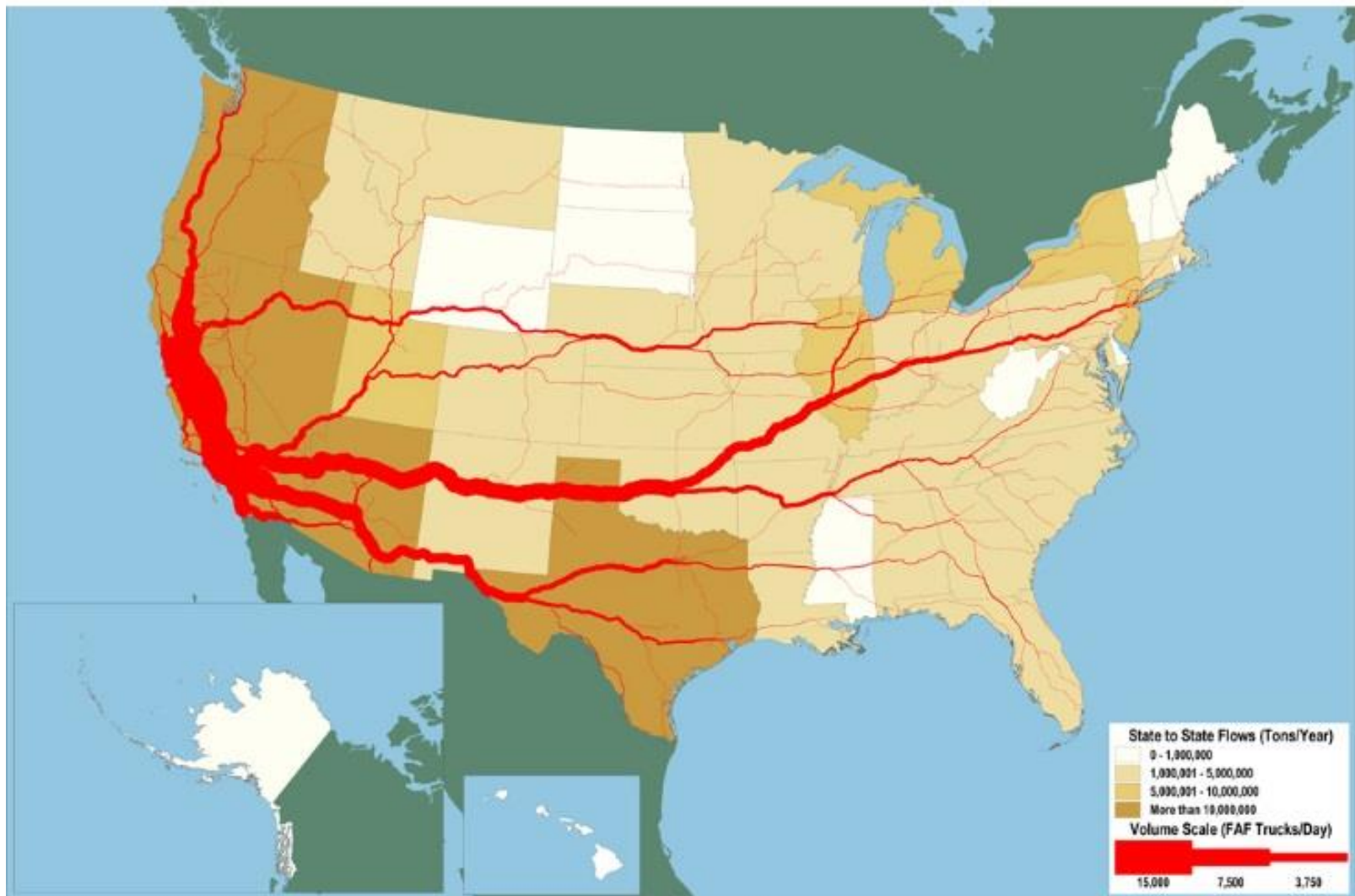
11% of total U.S. export merchandise value



California feeds America



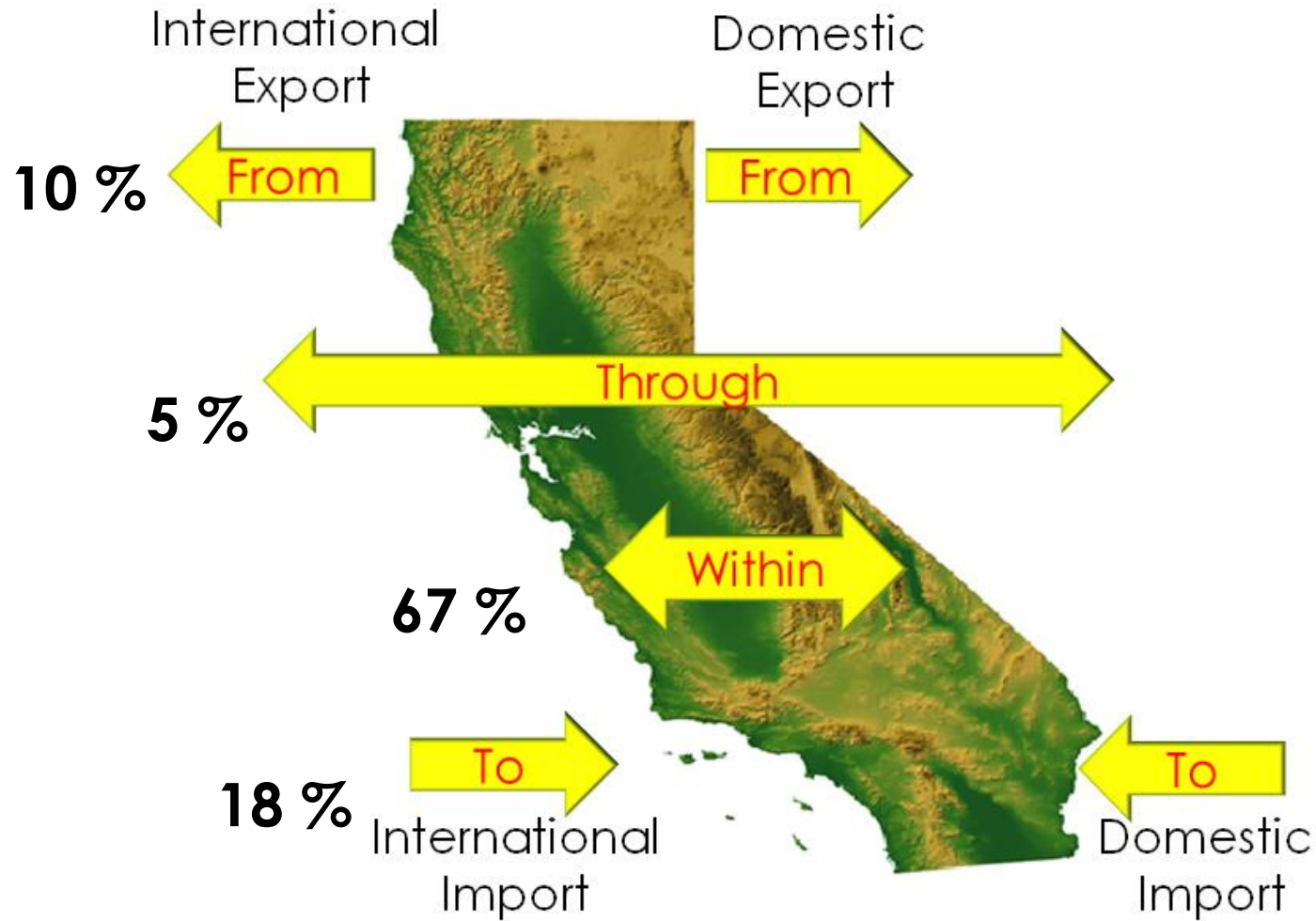
Major Flows by Truck To, From and Within California: 2010



Note: Major flows include domestic and international freight moving by truck on highway segments with more than twenty five FAF trucks per day and between places typically more than fifty miles apart.

Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.4, 2012.

2/3 of Freight is in California



Trends

Consumer Demand

Aging Infrastructure

Competition

Funding

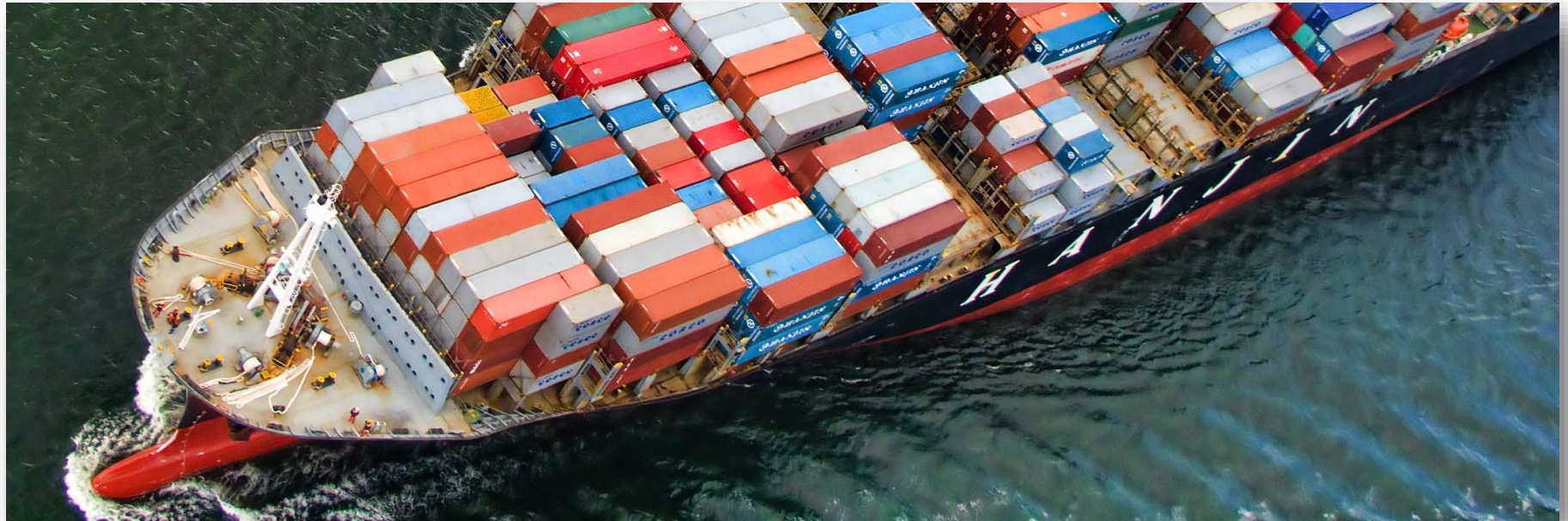
Regulations

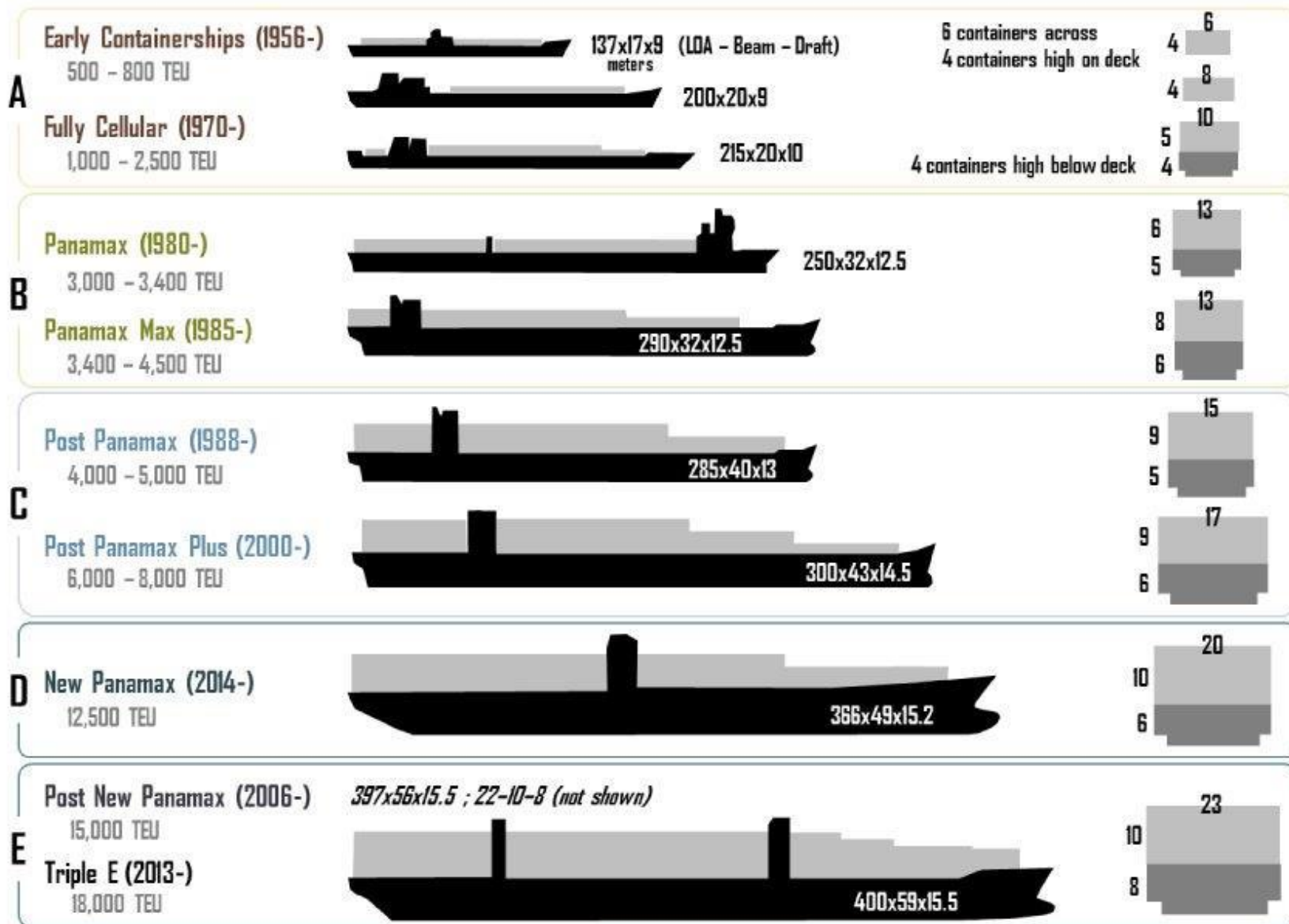
Data + Analytics



Supply Chain

TEUs







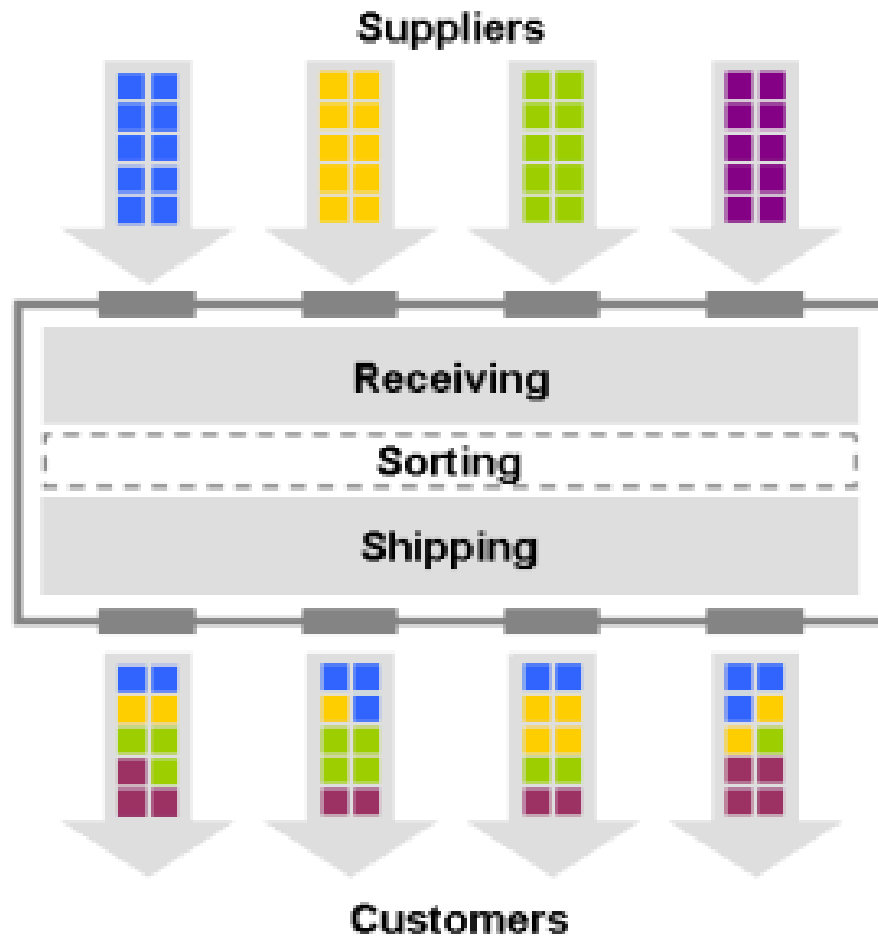
Benjamin Franklin
(Port of Long Beach)



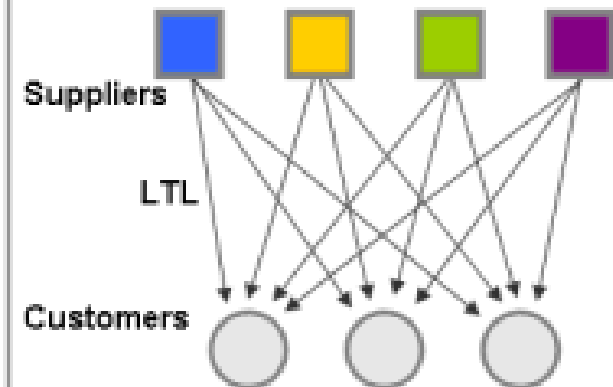




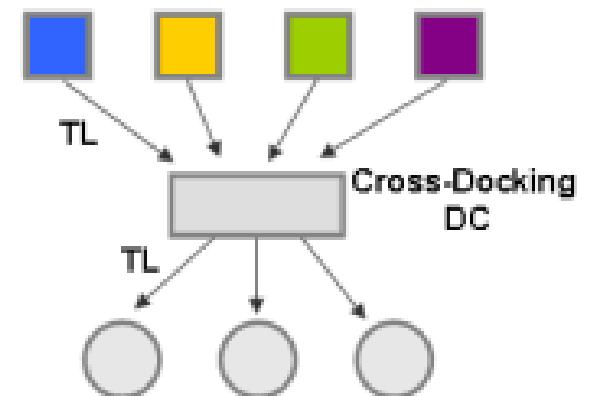
Distribution Center



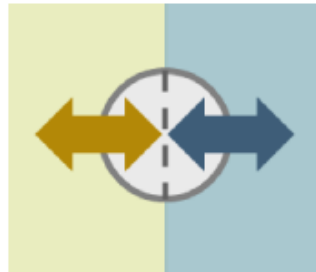
Before Cross-Docking



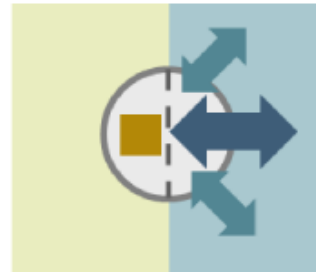
After Cross-Docking



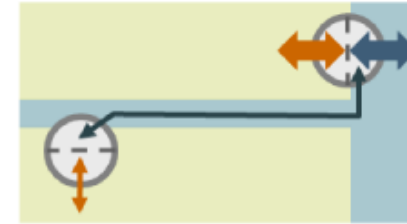
Port Terminals



Container sea terminal

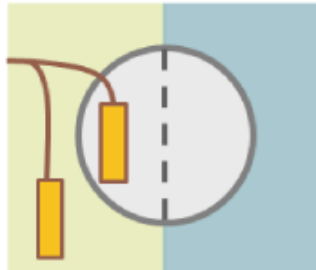


Intermediate hub

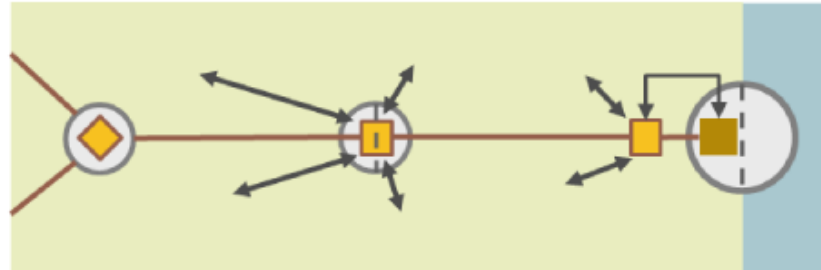


Barge terminal

Rail Terminals



On-dock and near dock

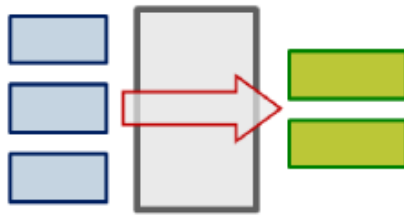


Transmodal terminal

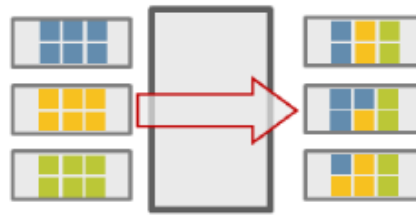
Load center

Satellite terminal

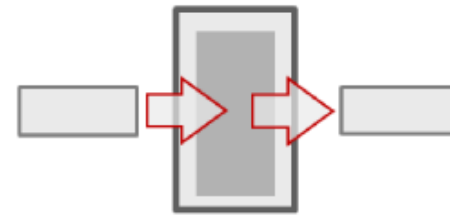
Distribution Centers



Transloading



Cross-docking



Warehousing

System Impacts











Curbside Parking

Alleyways



Deliveries and missed deliveries





Loading Zones

Community & Environmental Impacts

Community Impacts



Our Communities

Environmental justice

Noise and vibration

Lighting

Air pollution

Health effects

Congestion

Quality of life



Our Environments

Aspects of Freight

Impacts of mega ships

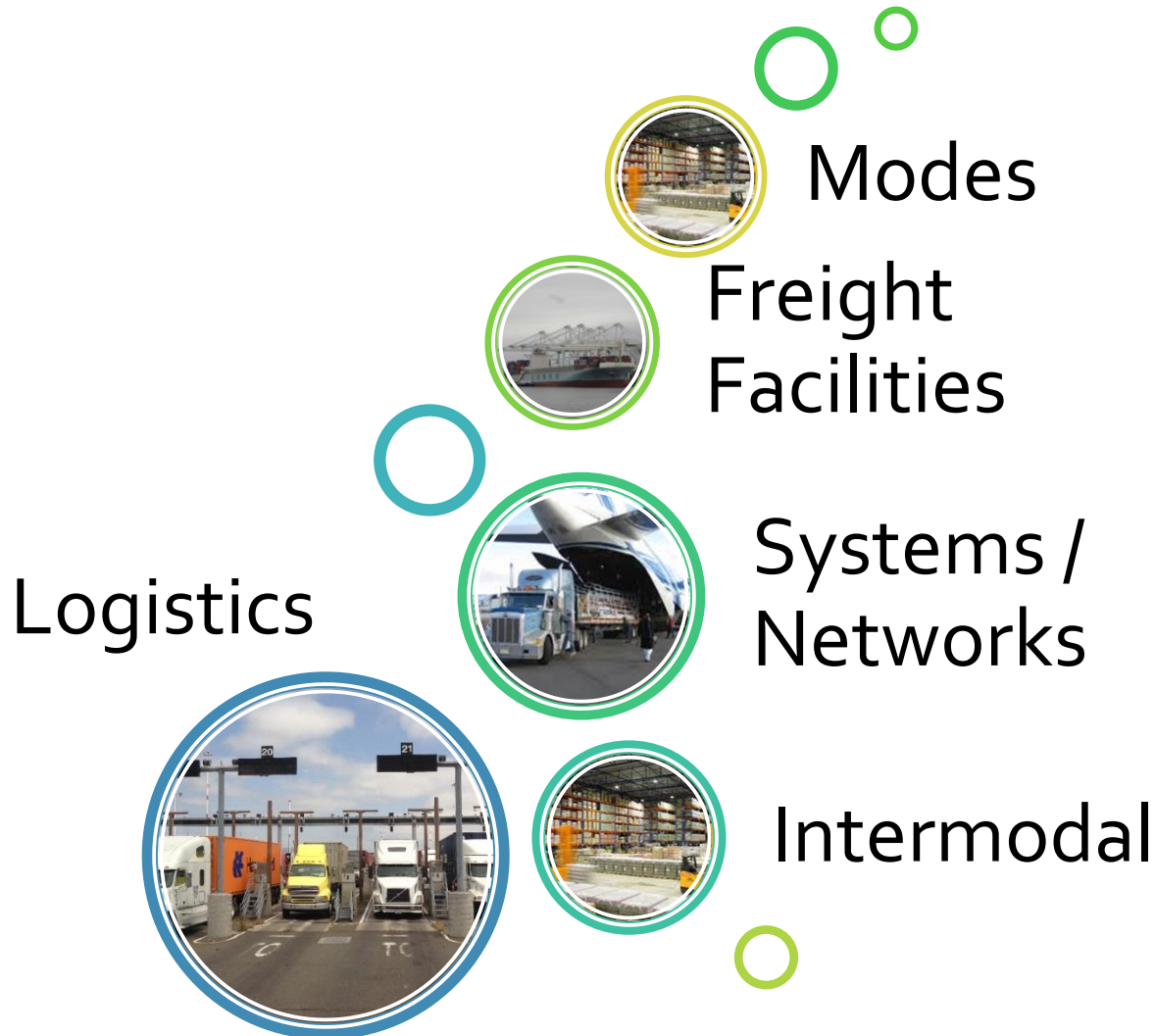
Inefficiencies created by regulations

Oversized loads

Global and domestic competition

Capacity increases without expansion

Freight Overview



Multimodal Integrated Systems

Trucks

Trains

Ocean Carriers

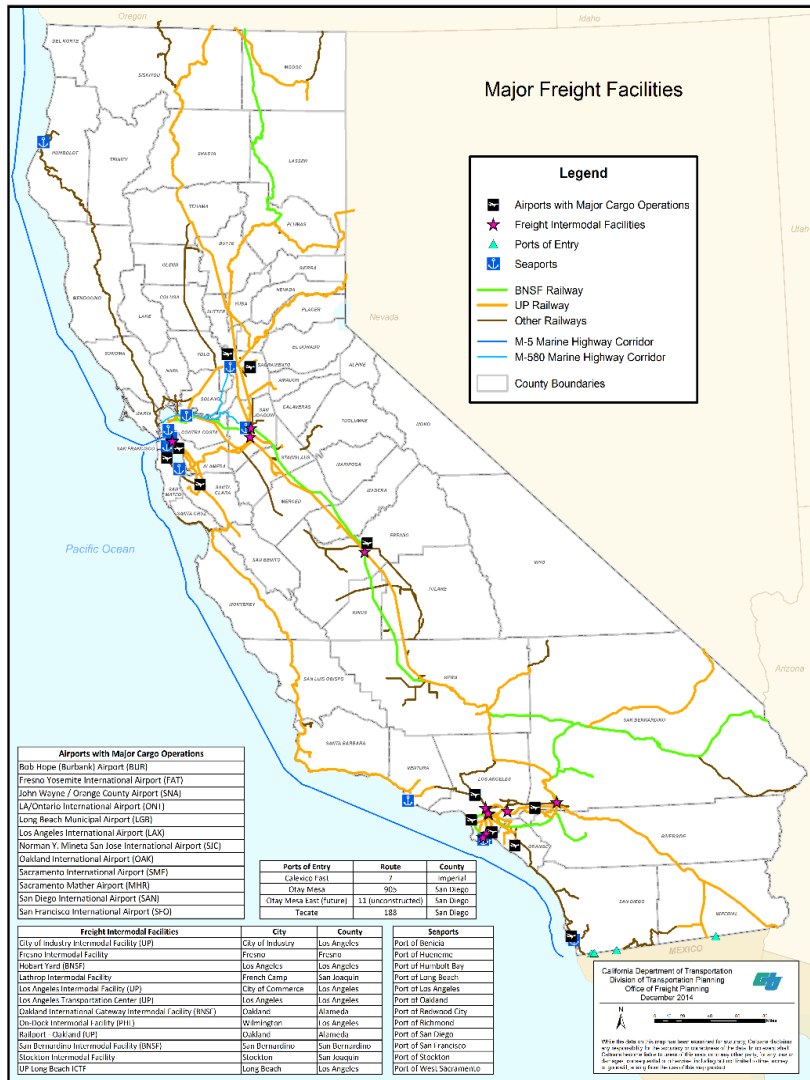
Cargo Planes

Cargo Bikes

Drones



Major Freight Facilities



Highways

Seaports




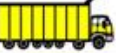
































Railroads

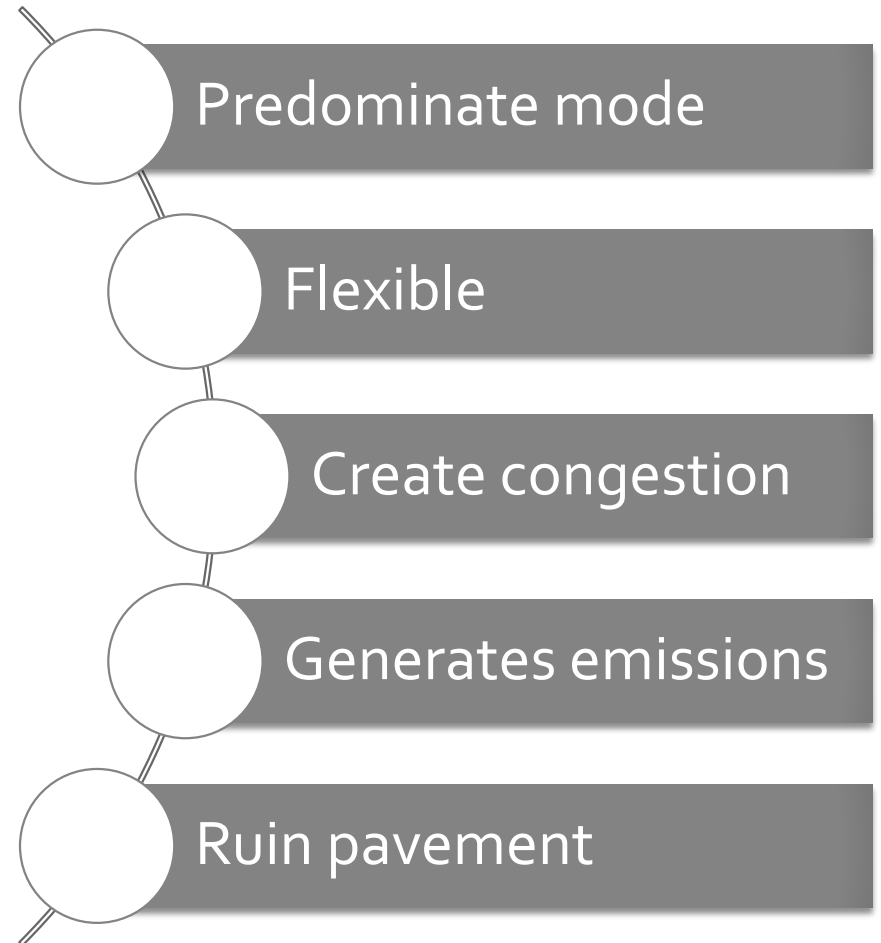
Air Cargo Airports

Freight Intermodal Facilities

Ports of Entry

Commercial Vehicles

Class 1 Motorcycles		Class 7 Four or more axle, single unit	
Class 2 Passenger cars		Class 8 Four or less axle, single trailer	
			
			
			
Class 3 Four tire, single unit		Class 9 5-Axle tractor semitrailer	
			
			
Class 4 Buses		Class 10 Six or more axle, single trailer	
		Class 11 Five or less axle, multi trailer	
			
Class 5 Two axle, six tire, single unit		Class 12 Six axle, multi-trailer	
		Class 13 Seven or more axle, multi-trailer	
			
Class 6 Three axle, single unit			
			
			
			



Planning for Commercial Vehicles

Turning
radius

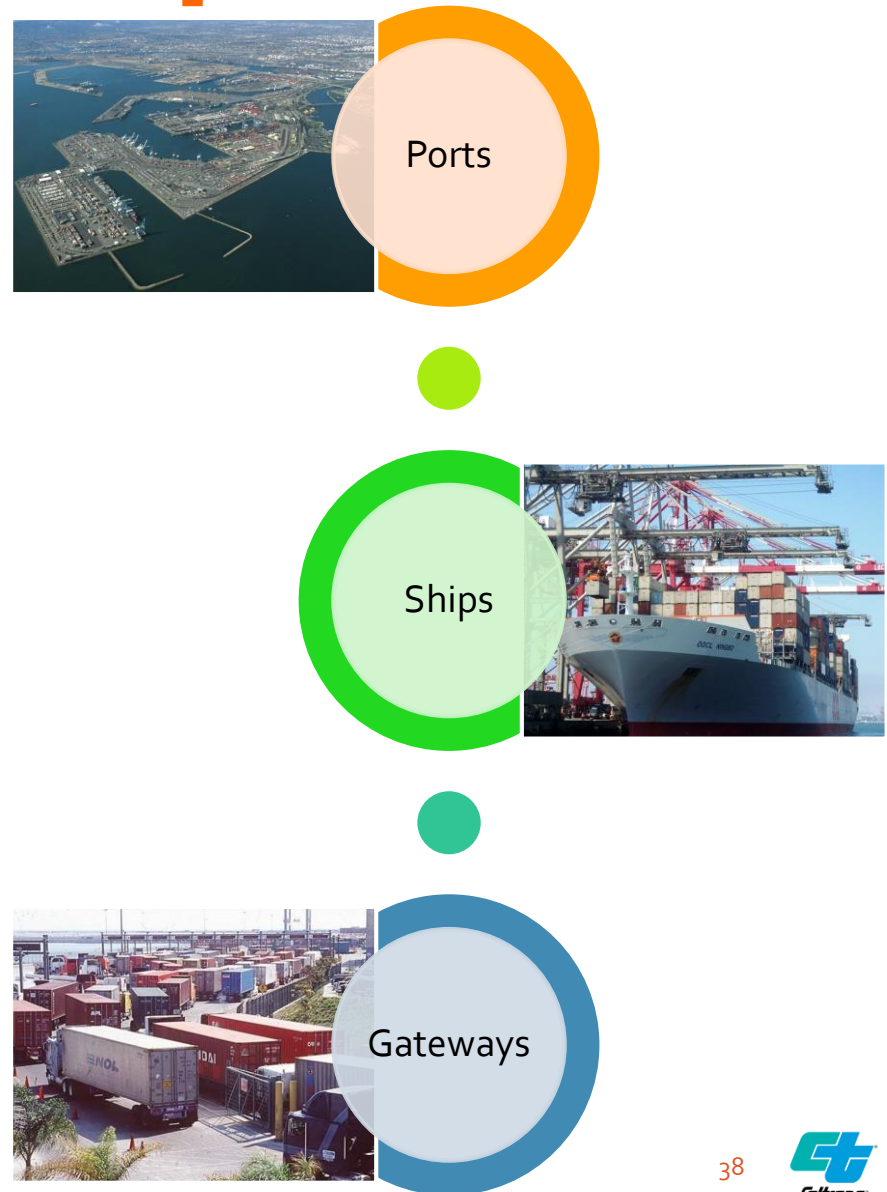
Height and
weight
restrictions

Federal
standard
routes

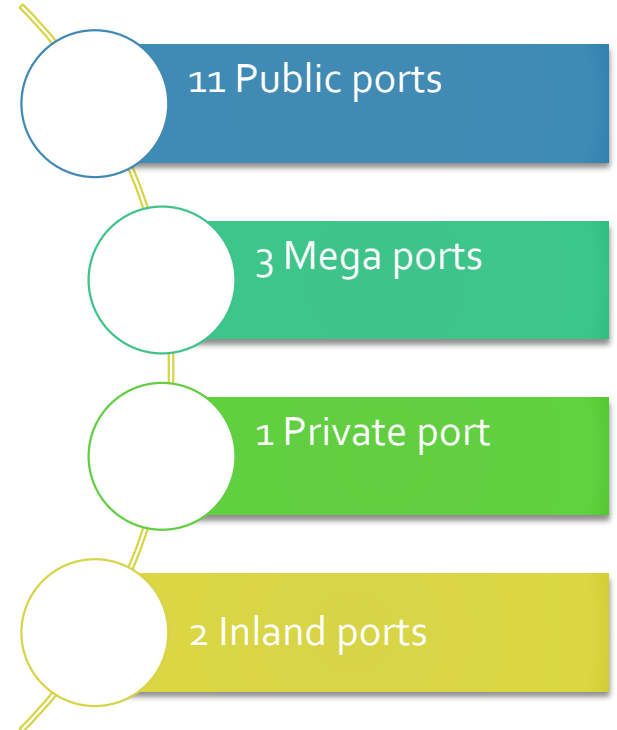
"Last Mile"
access

Maritime Transportation

- World gateways
- Highly competitive
- Economic engines
- Largest port complex
- Environmental stewards



California Seaports



Container Vessels



How big is big?

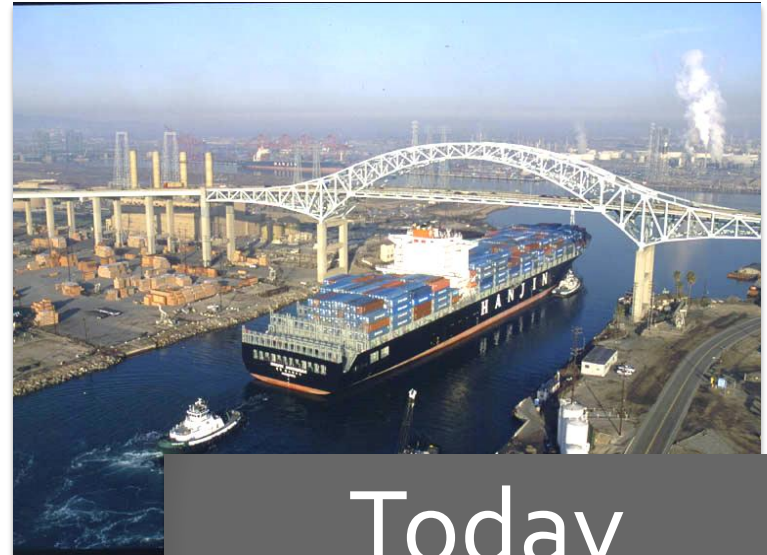


How many TEUs?

Gerald Desmond Bridge



1970s



Today



Built in 1968



What's hanging?



Major national facility

New Bridge Rendering



The New Gerald Desmond Bridge

California Freight Rail

- 2 Class I large and 29 Class III small railroads
- Several classification and intermodal yards
- Largest rail yard in the West



Freight carried by rail tends to:

- Travel long distances
- Be heavy or bulky
- Have less value by weight



Planning for Rail

Truck alternatives

Shared facilities

Hazardous loads

Abandoned rail



Air Cargo

**High value-to-weight ratio,
time-sensitive,
long distance**

**Dedicated
freight aircraft
or as “belly
cargo”**

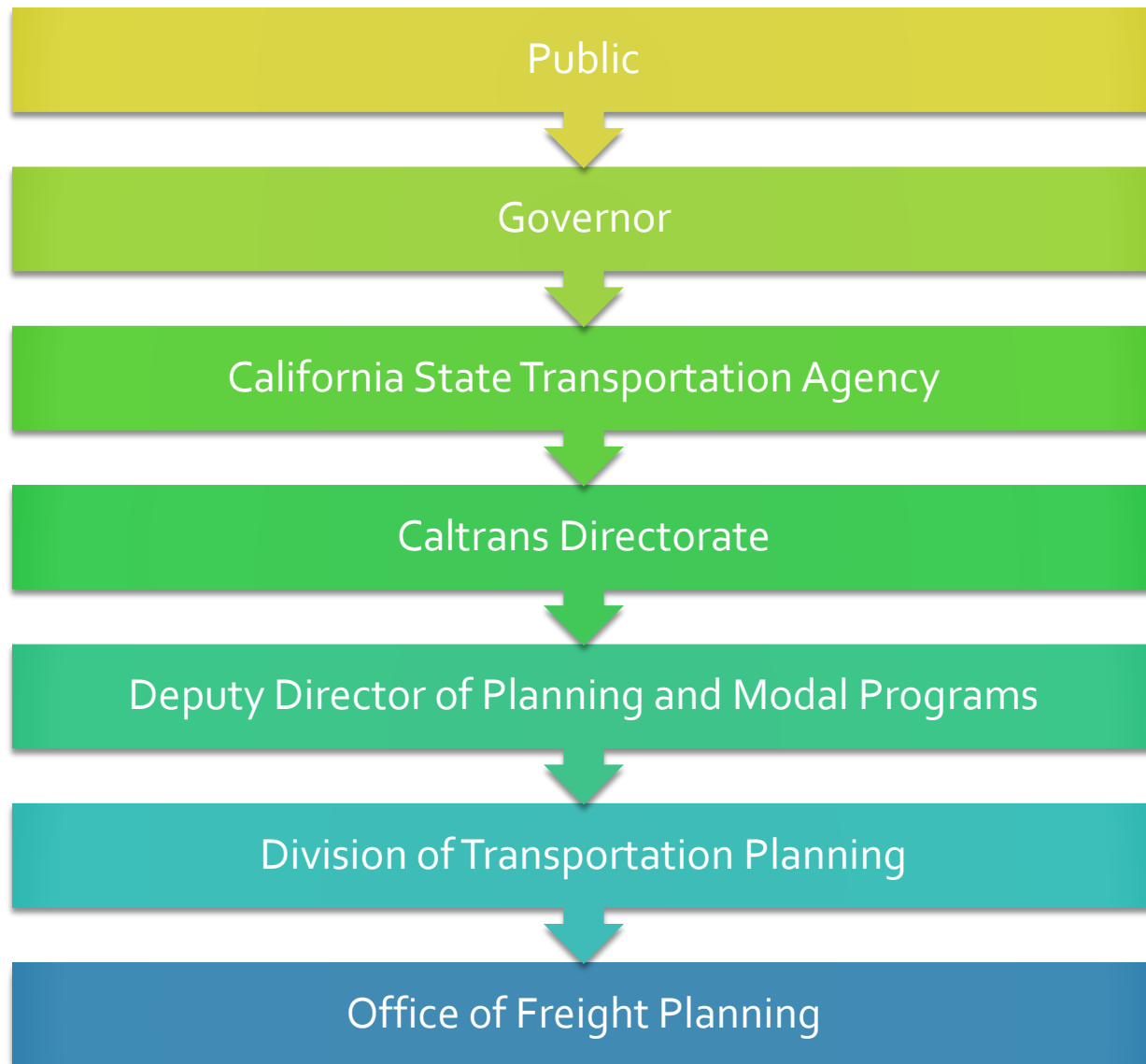
**More value
per ton than
any other
mode**

**Imports
exceed
exports**

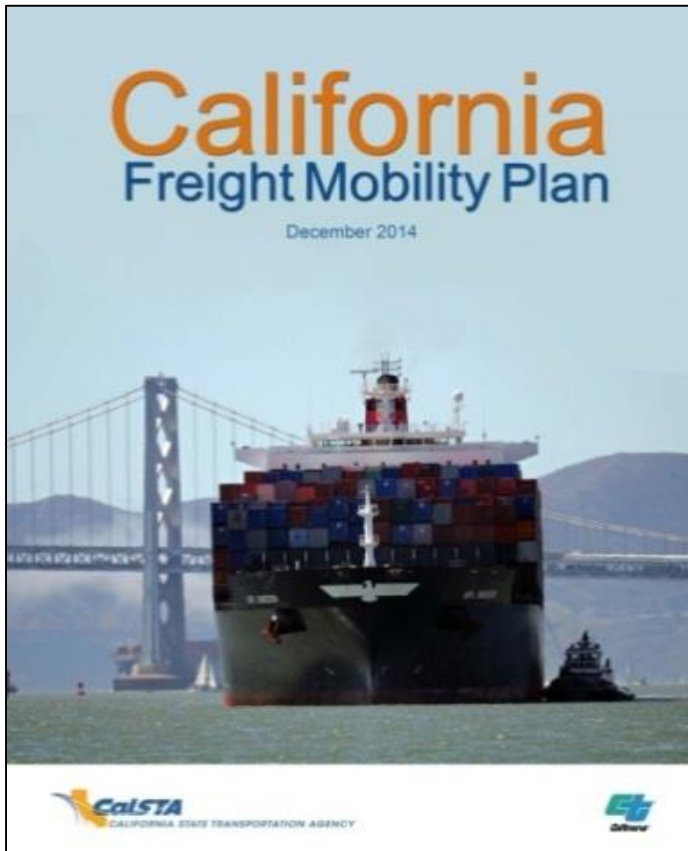
Land Ports of Entry



How Freight Planning “Fits In”



Primary Responsibilities



Includes

- Product development
- Coordination and education
- Programming advocacy

Freight Project

“An improvement that significantly contributes to the freight system’s economic activity or vitality;
relieves congestion on the freight system;
improves the safety, security, or resilience of the freight system; improves or preserves the freight system infrastructure; implements technology or innovation to improve the freight system or reduce or avoid its negative impacts; or reduces or avoids adverse community and/or environmental impacts of the freight system.”

CFMP 2014

TCIF Projects

Northern California

Seaports

4 projects - \$629 million

Railroads

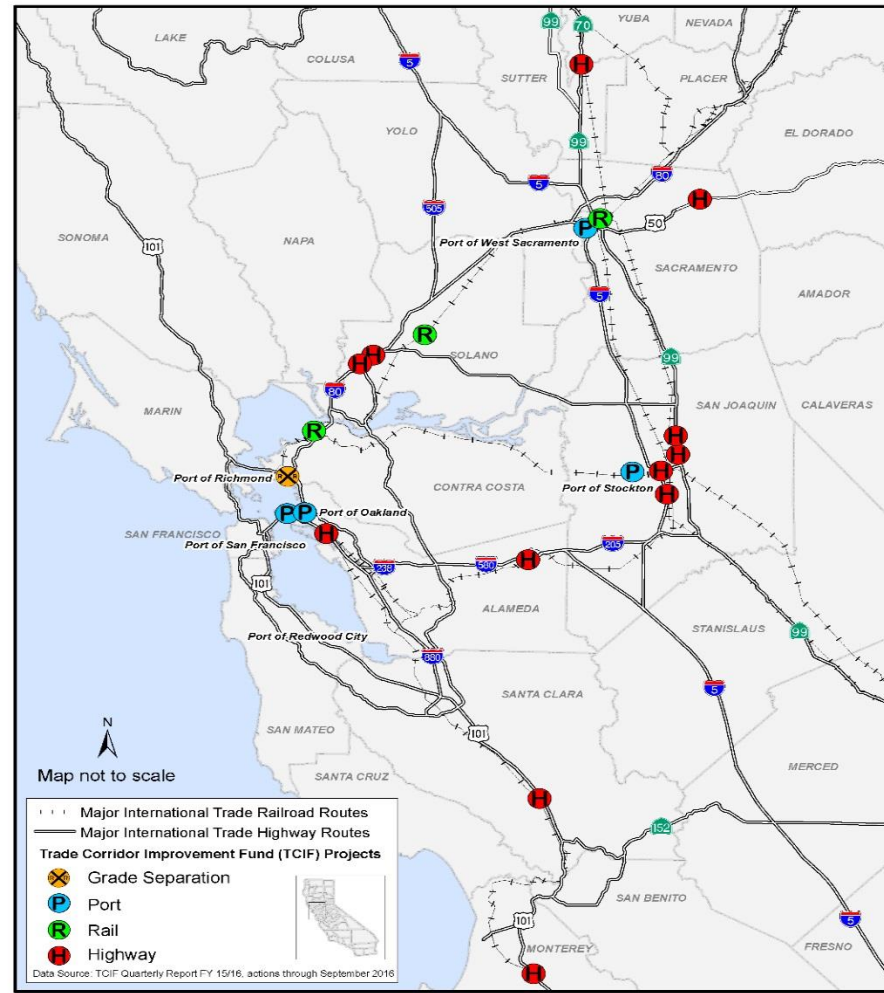
3 projects - \$130 million

Grade Separations

1 project - \$42 million

Highways

12 projects - \$617 million



TCIF Projects

Southern California

Seaports

11 projects - \$1.807 billion

Railroads

12 projects - \$458 million

Grade Separations

32 projects - \$2.417 billion

Highways

17 projects - \$1.321 billion



CALIFORNIA SUSTAINABLE FREIGHT ACTION PLAN



2050 Freight System Vision

Guiding Principles

2030 Statewide Targets

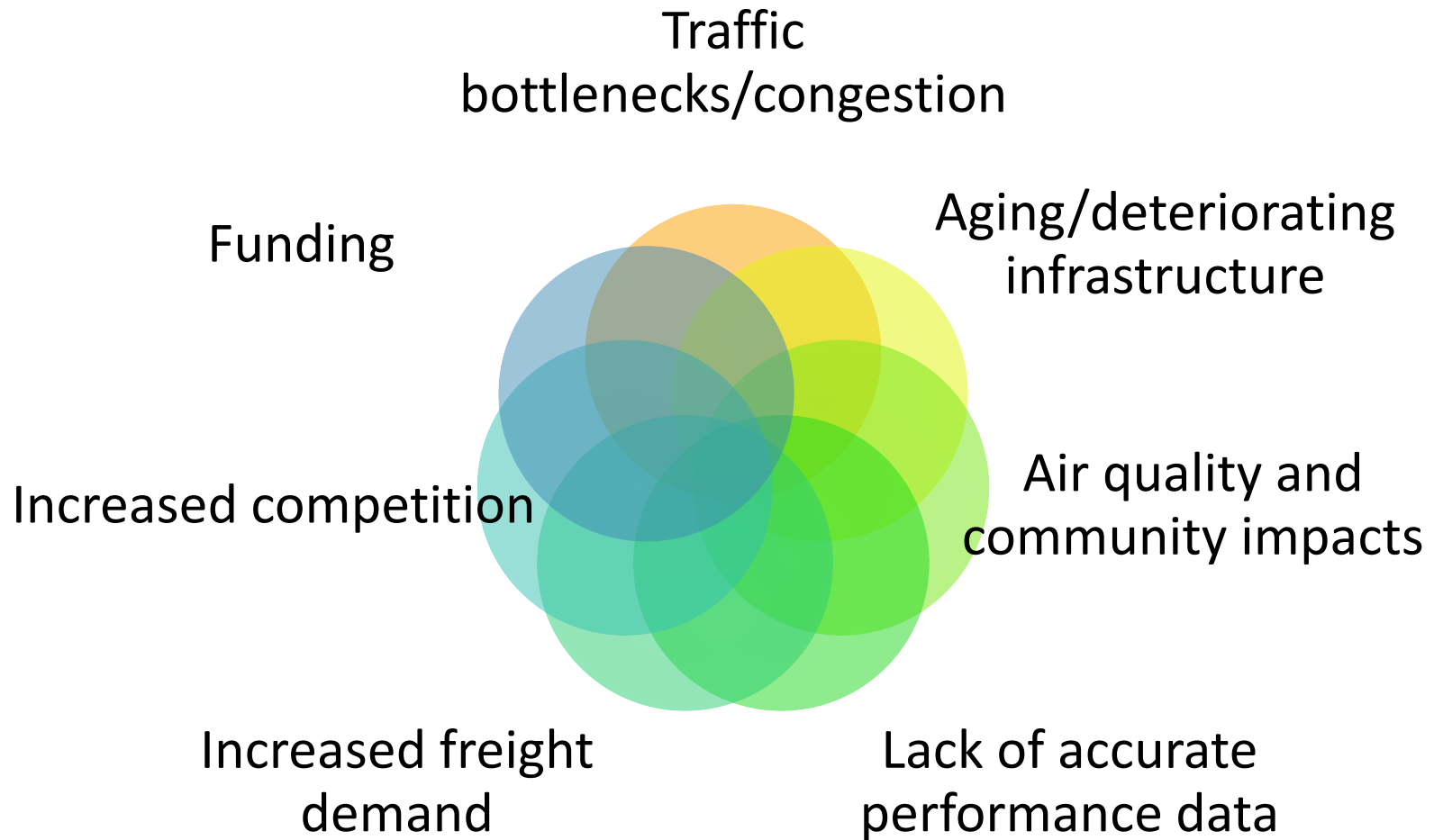
- Efficiency
- Zero Emission
- Competitiveness

9 State Agency Actions

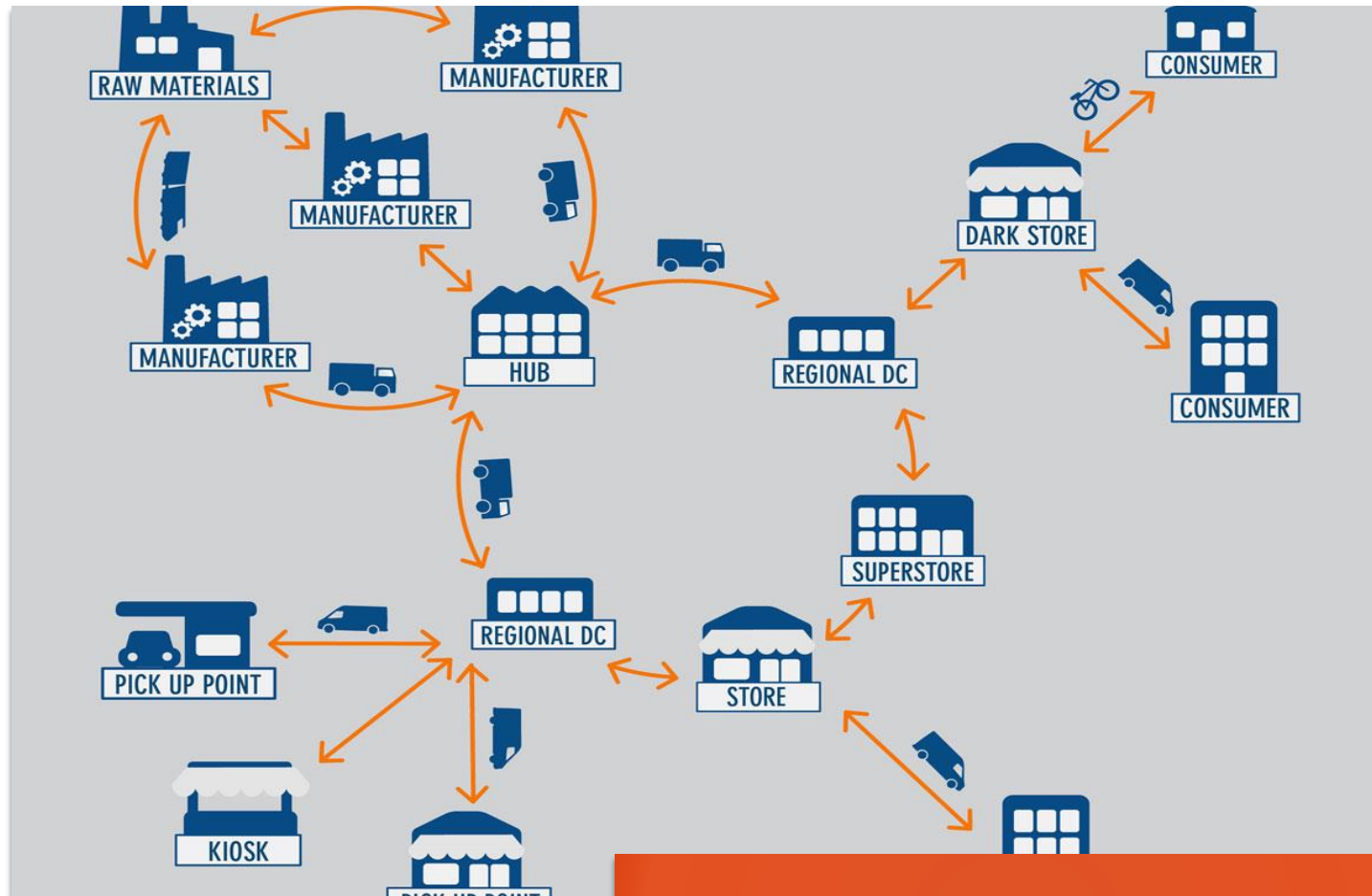
3 Pilot Projects

72 Implementation Steps

Freight Planning Challenges



Solutions?

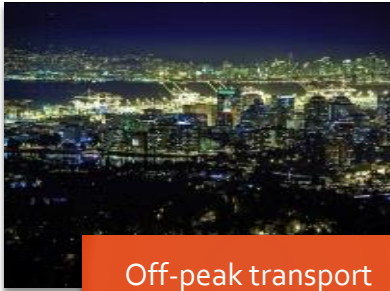


System of Systems

Solutions?



Clean energy



Off-peak transport



Dedicated freight lanes

Incremental Innovations

- Dedicated freight lanes
- Truck platooning
- Off-peak deliveries
- One California
- Asset management program
- Prepare for climate change
- Clean-fuel use coordination

Freight Systems of the Future?



Electric/Catenary?



Tubes/Capsules?

Freight Resources

Freight Planning Websites

- <http://onramp.dot.ca.gov/hq/tpp/offices/ogm/index.html>
- <http://www.dot.ca.gov/hq/tpp/offices/ogm/index.html>

California Freight Advisory Committee (CFAC) Meetings

Caltrans Goods Movement Seminars

- Contact DOTP's Workforce Development Branch for more information

FHWA: Talking Freight Webinars

- http://www.fhwa.dot.gov/planning/freight_planning/talking_freight

Questions?

THANK YOU!

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